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AD Notice of Proposed Rulemaking

FAA-ZWS-20689-6

DEPT. OF TRANSPORTATION
DOCKETS**AD Notice of Proposed Rulemaking****Federal Register Information**

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Header Information

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

2003-NM-280-AD

[Docket No. FAA-2004-18759; Directorate Identifier 2003-NM-280-AD]

RIN 2120-AA64

Airworthiness Directives; Boeing Model 707-100, -100B, -300, -300B (-320B Variant), -300C, and -E3A (Military) Series Airplanes; Model 720 and 720B Series Airplanes; Model 737-100, -200, -200C, -300, -400, and -500 Series Airplanes; and Model 747 Series Airplanes

Preamble Information

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to adopt a new airworthiness directive (AD) for certain Boeing transport category airplanes. This proposed AD would require repetitive tests of the overwing fuel fill ports for certain wing tanks; an electrical bonding resistance test between the bulkhead fittings of the engine fuel feed tube and the front spar inside the fuel tank of the wings; other specified actions; and applicable corrective actions if necessary. This proposed AD is prompted by our determination that this AD is necessary to reduce the potential for ignition sources inside fuel tanks. We are proposing this AD to prevent arcing or sparking at the interface between the bulkhead fittings of the engine fuel feed tube and the front spar inside the fuel tank of the wings and between the overwing fuel fill ports and the airplane structure during a lightning strike. Such arcing or sparking could provide a possible ignition source for the fuel vapor inside the fuel tank and cause consequent fuel tank explosions.

DATES: We must receive comments on this proposed AD by September 20, 2004.

ADDRESSES: Use one of the following addresses to submit comments on this proposed AD.

- DOT Docket Web site: Go to <http://dms.dot.gov> and follow the instructions for sending your comments electronically.
- Government-wide rulemaking web site: Go to <http://www.regulations.gov> and follow the instructions for sending your comments electronically.
- Mail: Docket Management Facility, U.S. Department of Transportation, 400 Seventh Street SW., Nassif Building, room PL-401, Washington, DC 20590.
- By fax: (202) 493-2251.
- Hand Delivery: room PL-401 on the plaza level of the Nassif Building, 400 Seventh Street SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

You can get the service information identified in this proposed AD from Boeing Commercial Airplanes, P.O. Box 3707, Seattle, Washington 98124-2207.

Related AD

AD Notice of Proposed Rulemaking

You may examine the contents of this AD docket on the Internet at <http://dms.dot.gov>, or at the Docket Management Facility, U.S. Department of Transportation, 400 Seventh Street SW., room PL-401, on the plaza level of the Nassif Building, Washington, DC.

FOR FURTHER INFORMATION CONTACT: Sulmo Mariano, Aerospace Engineer, Propulsion Branch, ANM-140S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98055-4056; telephone (425) 917-6501; fax (425) 917-6590.

SUPPLEMENTARY INFORMATION:

Docket Management System (DMS)

The FAA has implemented new procedures for maintaining AD dockets electronically. As of May 17, 2004, new AD actions are posted on DMS and assigned a docket number. We track each action and assign a corresponding directorate identifier. The DMS AD docket number is in the form "Docket No. FAA-2004-99999." The Transport Airplane Directorate identifier is in the form "Directorate Identifier 2004-NM-999-AD." Each DMS AD docket also lists the directorate identifier ("Old Docket Number") as a cross-reference for searching purposes.

Comments Invited

We invite you to submit any written relevant data, views, or arguments regarding this proposed AD. Send your comments to an address listed under **ADDRESSES**. Include "Docket No. FAA-2004-18759; Directorate Identifier ~~2003-NM-280-AD~~" in the subject line of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of the proposed AD. We will consider all comments submitted by the closing date and may amend the proposed AD in light of those comments.

We will post all comments we receive, without change, to <http://dms.dot.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact with FAA personnel concerning this proposed AD. Using the search function of that website, anyone can find and read the comments in any of our dockets, including the name of the individual who sent the comment (or signed the comment on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (65 FR 19477-78), or you may visit <http://dms.dot.gov>.

We are reviewing the writing style we currently use in regulatory documents. We are interested in your comments on whether the style of this document is clear, and your suggestions to improve the clarity of our communications that affect you. You can get more information about plain language at <http://www.faa.gov/language> and <http://www.plainlanguage.gov>.

Examining the Docket

You may examine the AD docket in person at the Docket Management Facility office between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The Docket Management Facility office (telephone (800) 647-5227) is located on the plaza level of the Nassif Building at the DOT street address stated in the **ADDRESSES** section. Comments will be available in the AD docket shortly after the DMS receives them.

Discussion

We have examined the underlying safety issues involved in recent fuel tank explosions on several large transport airplanes, including the adequacy of existing regulations, the service history of airplanes subject to those regulations, and existing maintenance practices for fuel tank systems. As a result of those findings, we issued a regulation titled "Transport Airplane Fuel Tank System Design Review, Flammability Reduction and Maintenance and Inspection Requirements" (67 FR 23086, May 7, 2001). In addition to new airworthiness standards for transport airplanes and new maintenance requirements, this rule included Special Federal Aviation Regulation No. 88 ("SFAR 88," Amendment 21-78, and subsequent

Amendments 21-82 and 21-83).

Among other actions, SFAR 88 requires certain type design (i.e., type certificate (TC) and supplemental type certificate (STC)) holders to substantiate that their fuel tank systems can prevent ignition sources in the fuel tanks. This requirement applies to type design holders for large turbine-powered transport airplanes and for subsequent modifications to those airplanes. It requires them to perform design reviews and to develop design changes and maintenance procedures if their designs do not meet the new fuel tank safety standards. As explained in the preamble to the rule, we intended to adopt airworthiness directives to mandate any changes found necessary to address unsafe conditions identified as a result of these reviews.

In evaluating these design reviews, we have established four criteria intended to define the unsafe conditions associated with fuel tank systems that require corrective actions. The percentage of operating time during which fuel tanks are exposed to flammable conditions is one of these criteria. The other three criteria address the failure types under evaluation: single failures, single failures in combination with another latent condition(s), and in-service failure experience. For all four criteria, the evaluations included consideration of previous actions taken that may mitigate the need for further action.

Based on this process, we have determined that the actions identified in this proposed AD are necessary to reduce the potential of ignition sources inside fuel tanks, which, in combination with flammable fuel vapors, could result in fuel tank explosions and consequent loss of the airplane.

In addition, we have received a report indicating that, during an electrical bonding and grounding test of 747 wing fuel tank penetrations, the bulkhead fittings of the engine fuel feed tube were not electrically bonded to the front spar. The same condition is found on some Model 707 series airplanes; on all Model 737-100, -200, -300, -400, and -500 series airplanes; and on all Model 747 series airplanes. We also received a report indicating that a lightning test showed a higher-than-expected electrical current in the engine fuel feed tubes inside the wing fuel tank on Model 747 series airplanes.

If the bulkhead fittings of the engine fuel feed tubes are not electrically bonded, there is a potential for arcing or sparking at the interface between the bulkhead fittings of the engine fuel feed tube and the wing front spar during a lightning strike. This event, in turn, could provide a possible ignition source for the fuel vapor inside the fuel tank and result in fuel tank explosions.

We also received a report that an inspection of the overwing fuel fill port showed that the overwing filler adapter may not be bonded to the upper wing skin on Model 707 and 720 series airplanes. The improper bonding has been attributed to incorrect installation or missing electrical bond data in the airplane maintenance manual or installation drawings. Also, an inspection done for SFAR 88 revealed that overwing fuel fill ports for wing tanks No. 1 and No. 4 and the center wing tank on Boeing Model 707 and 720 series airplanes can be lightning ignition sources because of their location. The overwing fuel fill ports for wing tanks No. 1 and No. 4 are located in an area where lightning, after initially attaching to the engine cowls or nose of the airplane, remains attached to the airplane and sweeps back as the airplane moves forward through the lightning channel. This creates a series of attachment points behind the initial attachment point. The overwing fuel fill ports are located either behind the engine nacelles or behind the nose of the airplane and are subject to these subsequent lightning attachments.

If the overwing fuel fill ports for wing tanks No. 1 and No. 4 and the center wing tank are not electrically bonded correctly, there is a potential for arcing or sparking at the interface between the ports and the airplane structure during a lightning strike. This event, in turn, could provide a possible ignition source for the fuel vapor inside the fuel tank and cause consequent fuel tank explosions.

Relevant Service Information

We have reviewed and approved the following service bulletins:

Referenced Service Bulletins

For model	Boeing
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707-E3A (military), -100, -100B, -300, -300B (-320B variant), and -300C series airplanes; and 720 series airplanes.	Alert Service Bulletin A3505, dated November 1, 2001.
707-100, -100B, -300, -300B, and -300C series airplanes; and 720 and 720B series airplanes.	Service Bulletin 3513, dated November 6, 2003.
737-100, -200, -200C, -300, -400, and -500 series airplanes	Service Bulletin 737-28A1174, Revision 1, dated July 18, 2002.
747-100, -100B, -100B SUD, -200B, -200C, -200F, -300, -400, -400D, and -400F series airplanes; and 747SP and 747SR series airplanes.	Alert Service Bulletin 747-28A2239, Revision 1, dated October 17, 2002.
747-400 and -400F series airplanes	Alert Service Bulletin 747-28A2245, Revision 1, dated August 21, 2003.

Boeing Service Bulletin 3513 describes procedures for repetitive electrical bonding resistance tests of the overwing fuel fill ports for wing tanks No. 1 and No. 4 and the center wing tank, and applicable corrective actions. The applicable corrective actions include:

- Cleaning certain surfaces;
- Applying certain sealants, chemical film coating, and an aero smoother;
- Installing the filler adapter and electrically bonding it; and
- Testing the fuel feed system for leaks.

The remaining service bulletins describe procedures for an electrical bonding resistance test between the bulkhead fittings of the engine fuel feed tube and the front spar inside the fuel tank of the wings, other specified actions, and applicable corrective actions. The other specified actions include the following:

- Draining the fuel tanks;
- Removing the fuel feed tubes, fuel manifold, and the bulkhead fittings; and
- Cleaning the fittings and front spar areas.

The applicable corrective actions include:

- Cleaning certain surfaces;
- Applying certain sealants;
- Installing certain parts; and
- Testing the fuel feed system for leaks.

We have determined that accomplishment of the actions specified in the applicable service bulletin will adequately address the unsafe condition.

FAA's Determination and Requirements of the Proposed AD

We have evaluated all pertinent information and identified an unsafe condition that is likely to exist or develop on other airplanes of this same type design. Therefore, we are proposing this AD, which would require, for certain airplanes, repetitive electrical bonding resistance tests of the overwing fuel fill ports for wing tanks No. 1 and No. 4 and the center wing tank, and applicable corrective actions. The proposed AD also would require, for certain other airplanes, an electrical bonding resistance test between the bulkhead fittings of the engine fuel feed tube and the front spar inside the fuel tank of the wings, other specified

actions, and applicable corrective actions. The proposed AD would require using the service information described previously to perform these actions, except as discussed under "Difference Between the Proposed AD and the Service Bulletins."

Difference Between the Proposed AD and Certain Service Bulletins

Although certain service bulletins recommend accomplishing the electrical bonding resistance test "at the earliest opportunity where manpower, materials and facilities are available," we have determined that this imprecise compliance time would not address the identified unsafe condition in a timely manner. In developing an appropriate compliance time for this proposed AD, we considered not only the manufacturer's recommendation, but the degree of urgency associated with addressing the subject unsafe condition, the average utilization of the affected fleet, and the time necessary to perform the test. In light of all of these factors, we find a compliance time of 5 years for completing the proposed actions to be warranted, in that it represents an appropriate interval of time for affected airplanes to continue to operate without compromising safety.

Costs of Compliance

This proposed AD would affect about 4,303 series airplanes worldwide. The following table provides the estimated costs for U.S. operators to comply with this proposed AD.

Estimated Costs

For model	Work hours	Average labor rate per hour	Cost per airplane	Number of U.S.-registered airplanes	Fleet cost
707-E3A (military), -100, -100B, -300, -300B (including -320B variant), and -300C series airplanes; and 720 series airplanes.	16	\$65	\$1,040	41	\$42,640
707-100, -100B, -300, -300B, and -300C series airplanes; and 720 and 720B series airplanes.	Between 4 and 6.	65	Between 260 and 390.	73	Between 18,980 and 28,470
737-100, -200, -200C, -300, -400, and -500 series airplanes.	8	65	520	1,095	569,400
747-100, -100B, -100B SUD, -200B, -200C, -200F, -300, -400, -400D, and -400F series airplanes; and 747SP and 747SR series airplanes.	70	65	4,550	257	1,169,350
747-400 and -400F series airplanes	18	65	1,170	1	1,170

Regulatory Findings

We have determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that the proposed regulation:

1. Is not a "significant regulatory action" under Executive Order 12866;

2. Is not a "significant rule" under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and

3. Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

We prepared a regulatory evaluation of the estimated costs to comply with this proposed AD. See the **ADDRESSES** section for a location to examine the regulatory evaluation.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Safety.

Regulatory Information

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39-AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

Boeing: Docket No. FAA-2004-18759; Directorate Identifier **2003-NM-280-AD**.

Comments Due Date

(a) The Federal Aviation Administration (FAA) must receive comments on this AD action by September 20, 2004.

Affected ADs

(b) None.

Applicability

(c) This AD applies to the airplanes listed in Table 1 of this AD, certificated in any category.

Table 1.-Applicability

Model	As listed in
707-E3A (military), -100, -100B, -300, -300B (-320B variant), and -300C series airplanes; and 720 series airplanes	Boeing Alert Service Bulletin A3505, dated November 1, 2001.
707-100, -100B, -300, -300B, and -300C series airplanes; and 720 and 720B series airplanes.	Boeing Service Bulletin 3513, dated November 6, 2003.
737-100, -200, -200C, -300, -400, and -500 series airplanes	Boeing Service Bulletin 737-28A1174, Revision 1, dated July 18, 2002.
747-100, -100B, -100B SUD, -200B, -200C, -200F, -300, 400, -400D, and -400F series airplanes; and	Boeing Alert Service Bulletin 747-28A2239, Revision 1, dated October 17, 2002.

747SP and 747SR series airplanes.	
747-400 and -400F series airplanes	Boeing Alert Service Bulletin 747-28A2245, Revision 1, dated August 21, 2003.

Unsafe Condition

(d) This AD was prompted by our determination that this AD is necessary to reduce the potential for ignition sources inside fuel tanks. We are issuing this AD to prevent arcing or sparking at the interface between the bulkhead fittings of the engine fuel feed tube and the front spar of the wings and between the overwing fuel fill ports and the airplane structure during a lightning strike. Such arcing or sparking could provide a possible ignition source for the fuel vapor inside the fuel tank and cause consequent fuel tank explosions.

Compliance

(e) You are responsible for having the actions required by this AD performed within the compliance times specified, unless the actions have already been done.

Service Bulletins

(f) The term "service bulletin," as used in this AD, means the Work Instructions of the applicable service bulletins specified in the "As Listed In" column of Table 1 of this AD.

(g) Actions specified in paragraphs (h) through (i) of this AD that were done before the effective date of this AD in accordance with the applicable service information listed in Table 2 of this AD are acceptable for compliance with the applicable requirements of this AD.

Table 2.-Acceptable Original Issues of Service Bulletins

For model	Boeing
(1) 737-100, -200, -200C, -300, -400, and -500 series airplanes	Service Bulletin 737-28A1174, dated December 20, 2001.
(2) 747-100, -100B, -100B SUD, -200B, -200C, -200F, -300, -400, -400D, and -400F series airplanes; and 747SP and 747SR series airplanes.	Alert Service Bulletin 747-28A2239, dated November 29, 2001.
(3) 747-400 and -400F series airplanes	Alert Service Bulletin 747-28A2245, dated November 26, 2002.

Resistance Test, Other Specified Actions, and Corrective Actions

(h) For the airplanes identified in paragraphs (h)(1) through (h)(4) of this AD: Within 5 years after the effective date of this AD, do an electrical bonding resistance test between the bulkhead fittings of the engine fuel feed tube and the front spar inside the fuel tank of the wings to determine the resistance, and do other specified actions and applicable corrective actions, by accomplishing all the actions specified in paragraph 3.B. of the applicable service bulletin. Do the actions in accordance with the service bulletin. Do the applicable corrective actions before further flight.

(1) Model 707-E3A (military), -100, -100B, -300, -300B (-320B variant), and -300C series airplanes; and Model 720 series airplanes.

(2) Model 737-100, -200, -200C, -300, -400, and -500 series airplanes.

(3) Model 747-100, -100B, -100B SUD, -200B, -200C, -200F, -300, -400, -400D, and -400F series airplanes; and Model 747SP and 747SR series airplanes.

(4) Model 747-400 and -400F series airplanes.

(i) For Model 707-100, -100B, -300, -300B, and -300C series airplanes; and Model 720 and 720B series airplanes: Within 5 years after the effective date of this AD, do an electrical bonding resistance test of the over-wing fuel fill ports for the wing tanks No. 1 and No. 4 and the center wing tank to determine the resistance, and do applicable corrective actions, by accomplishing all the actions specified in paragraph 3.B. of the applicable service bulletin. Do the actions in accordance with the service bulletin. Do the applicable corrective actions before further flight. Repeat the electrical bonding resistance test at intervals not to exceed 14,000 flight hours.

Alternative Methods of Compliance (AMOCs)

(j) The Manager, Seattle Aircraft Certification Office (ACO), FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19.

Footer Information

Issued in Renton, Washington, on July 15, 2004.

Ali Bahrami,

Manager, Transport Airplane Directorate,

Aircraft Certification Service.

[FR Doc. 04-17763 Filed 8-3-04; 8:45 am]

BILLING CODE 4910-13-P

Comments

Additional Information

Document History

Other AD NPRMs Actions:

Not Applicable